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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Taku Hirayama

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WENDEROTH, LIND & PONACK, L.L.P.

1030 15th Street, N.W.,

Suite 400 East

Washington, DC 20005-1503

EXAMINER

JOHNSON, CONNIE P

ART UNIT

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1795

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/568,951	Applicant(s) HIRAYAMA ET AL.	
	Examiner CONNIE P. JOHNSON	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/28/2008, 10/3/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Status

1. Claims 1-13 are presented.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1, 2, 4, 5, 9, 10, 12 and 13 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 29, 30, 33, 36, 37, 39 and 40 of U.S. Patent No. 7,371,510. Although the conflicting claims are not identical, they are not patentably distinct from each other because Hirayama discloses a method of making a resist pattern wherein a resist protective film is applied on a resist composition and comprises a polymer with fluorinated hydrocarbon groups and acid groups .

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-7, 9 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Wakiya et al., U.S. Patent Publication No. 2001/0026903 A1.

Wakiya teaches an antireflective coating composition comprising a water-soluble polymerizable monomer (page 2, [0018]) and an acidic compound with a formula comprising: R_fCOOH or R_fSO_3H (page 2, formulas (I) and (II), respectively) wherein R_f is a fluorinated hydrocarbon grouping which part or all of the hydrogen atoms of a saturated or unsaturated hydrocarbon group having 2 to 20 carbon atoms are substituted with fluorine atoms and R'_f is also a fluorinated hydrocarbon grouping which part or all of the hydrogen atoms of a saturated or unsaturated hydrocarbon group having 2 to 20 carbon atoms are substituted with fluorine atoms. The formulas (I) and (II) of Wakiya are representative of the acidic compounds in claim 5. The antireflective coating also comprises a nitrogen-containing compound including alkanolamines and tetramethylammonium hydroxide (page 2, [0024-0025]) (instant claims 6 and 7).

The recitation in claim 1, “for a liquid immersion lithography process for forming the resist protective film suitably used for the liquid immersion lithography process, in which a light beam is selectively irradiated on the resist film through a non-aqueous solution” is intended use and does not add positive recitation to the claim. Applicant is reminded of MPEP 2106 with regards to intended use.

The recitation in claim 2, “wherein the liquid immersion lithography process improves the resolution of resist patterns by irradiating a light beam on a resist film interposing a given thickness of the non-aqueous solution with a refractive index higher than that of air at least on the resist film in a path, along where the lithography exposing light beam passes to the resist film” is intended use and does not add positive recitation to the claim.

The recitation in claim 9, “wherein the non-aqueous solution is a fluorinated liquid” is intended use and does not add positive recitation to the claim.

The recitation in claim 12, “for a liquid immersion lithography process suitably used for the liquid immersion lithography process...” is intended use and does not add positive recitation to the claim.

6. Claims 1-6, 9, 10, 12 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Houlihan et al., U.S. Patent Publication No. 2005/0202351 A1.

Houlihan teaches a topcoat for immersion lithography. The topcoat comprises a polymer that is soluble in aqueous alkaline solutions (page 3, [0035]) (instant claim 1). The recitation in claim 1, “for a liquid immersion lithography process for forming the resist protective film suitably used for the liquid immersion lithography process, in

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which a light beam is selectively irradiated on the resist film through a non-aqueous solution” is intended use and does not add positive recitation to the claim. Applicant is reminded of MPEP 2106 with regards to intended use.

The recitation in claim 2, “wherein the liquid immersion lithography process improves the resolution of resist patterns by irradiating a light beam on a resist film interposing a given thickness of the non-aqueous solution with a refractive index higher than that of air at least on the resist film in a path, along where the lithography exposing light beam passes to the resist film” is intended use and does not add positive recitation to the claim.

The recitation in claim 9, “wherein the non-aqueous solution is a fluorinated liquid” is intended use and does not add positive recitation to the claim.

The topcoat also comprises a sulfonic acid compound (see figure 9: examples of alkylsulfonic acid capped norbornene repeat units. The examples in figure 9 are representative of R_1fSO_3H , which is an acidic compound as claimed (claim 3 and formula 2 in instant claim 5). The recitation in claim 12, “for a liquid immersion lithography process suitably used for the liquid immersion lithography process...” is intended use and does not add positive recitation to the claim.

The topcoat also comprises a polymer with a nitrogen-containing group, such as the groups: $-CO-NR$ and $CO-NHR$ (page 5, [0051]) (instant claim 6). Houlihan also teaches the topcoat applied to a resist layer. The resist layer comprises a polymer with fluorinated alcohol monomers (page 6, formula 2) and monomer units with alkoxy groups, which are acid-decomposing groups (page 6, [0054]). The resist layer also comprises a photoacid generator (pages 6-7, [0062]). The method of making the resist

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pattern comprises forming a topcoat on a resist composition, applying the immersion liquid to the topcoat, exposing the resist composition and developing (page 2, [0016]) (instant claim 13).

7. Claims 1-5, 9, 10, 11, 12 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Houlihan et al., U.S. Patent Publication No. 2005/0202347 A1.

Houlihan teaches a topcoat for immersion lithography. The topcoat comprises a polymer that is soluble in aqueous alkaline solutions (page 2, [0018]) (instant claim 1). The recitation in claim 1, “for a liquid immersion lithography process for forming the resist protective film suitably used for the liquid immersion lithography process, in which a light beam is selectively irradiated on the resist film through a non-aqueous solution” is intended use and does not add positive recitation to the claim. Applicant is reminded of MPEP 2106 with regards to intended use.

The recitation in claim 2, “wherein the liquid immersion lithography process improves the resolution of resist patterns by irradiating a light beam on a resist film interposing a given thickness of the non-aqueous solution with a refractive index higher than that of air at least on the resist film in a path, along where the lithography exposing light beam passes to the resist film” is intended use and does not add positive recitation to the claim.

The recitation in claim 9, “wherein the non-aqueous solution is a fluorinated liquid” is intended use and does not add positive recitation to the claim.

The topcoat also comprises a sulfonic acid compound and a fluorinated alcohol with an aliphatic cyclic structure (see figure 7: examples of partially fluorinated

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polymers). The examples in figure 9 are representative of R_1fSO_3H , which is an acidic compound as claimed (claim 3 and formula 2 in instant claim 5). The recitation in claim 12, “for a liquid immersion lithography process suitably used for the liquid immersion lithography process...” is intended use and does not add positive recitation to the claim.

The topcoat also comprises a polymer with a nitrogen-containing group, such as the groups: $-CO-NR$ and $CO-NHR$ (page 5, [0051]) (instant claim 6). Houlihan also teaches the topcoat applied to a resist layer. The resist layer comprises a polymer with fluorinated alcohol monomers (page 6, formula 2) and monomer units with alkoxy groups, which are acid-decomposing groups (page 6, [0054]). The resist layer also comprises a photoacid generator (pages 6-7, [0062]). The method of making the resist pattern comprises forming a topcoat on a resist composition, applying the immersion liquid to the topcoat, exposing the resist composition and developing (page 3, [0034]) (instant claim 13). The topcoat layer has a pK_a of -9 to 11, which is inherently inclusive of a pH of 2.4 to 2.8 as in instant claim 11.

8. Claims 1, 6 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Jung et al., U.S. Patent Publication No. 2003/0108815 A1.

Jung teaches an amine contamination-protecting top-coating composition comprising an amine contamination-protecting compound and a water-soluble resin. Exemplary amine contamination-protecting compounds include amino acid derivatives (page 2, [0019]) (instant claim 8).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CONNIE P. JOHNSON whose telephone number is (571)272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Connie P. Johnson
Examiner
Art Unit 1795

/Cynthia H Kelly/
Supervisory Patent Examiner, Art Unit 1795